Integrity Management Standards Development for Floating Systems – An Overview

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API Recommended Practice 2FPS – is the principal document that addresses the Planning, Designing, and Constructing of Floating Production Systems (2nd Ed., Oct 2011)

- Explicitly covers the following types of floating structures
  - Monohulls (ship-shaped structures and barges)
  - Semi-submersibles, Spars, TLPs

- Applicable to all possible-cycle stages of floating production systems, such as
  - Design, construction and installation of new structures, including requirements for inspection, integrity management, conversion for different use at different locations and future removal

API 2 GEN is being developed to provide guidance to standards developers
- Establish a framework for implementation in standards that builds on a systems perspective and offer a conscious approach to risk management over life of assets

API RP 2SIM - Structural Integrity Management addresses
- Designer’s role in the initial specification and development of the SIM system;
- Expectations on the owner for effective implementation of SIM over life time of the structure

- FEAT will deliver 3 new standards to expand this portfolio to specifically address moorings, risers and floating systems and their interfaces with respect to integrity management.
Objectives
• Deliver a coordinated set of IM standards that references a common integrity management frame work that recognizes and addresses interfaces between floater hull, mooring and riser
• Recognize intent is to deliver an “assessment” (fitness-for-service) document and not a design document
  • identify issues that need to be returned to the design document for updates

How, Why & What
• Leverage the Deepstar reports and progress aggressively to develop a set of RPs in an accelerated manner.
• Focus on getting the philosophy and common reference frame work and the highest priority IM needs captured..
  • Ensure that the FS interfaces are covered;
  • Leverage 2SIM experience for setting performance targets are made keeping in mind the differences between floaters and fixed structures
Integrity Mgmt. - Stakeholder Landscape

- Accountable to government to safeguard people and the environment
- Set minimum requirements across the industry
- Seek industry expertise as input

Contractors, Vendors, Class Societies

- Have expertise and experience to design the asset and provide services to assure design intent & asset integrity targets are met.
- Can provide CVA and I3P review capacity for the Regulator
- See wide range of practices across operators

Regulators

API - Administer the development and promotion of the suite of industry standards required to demonstrate fitness-for-service across the portfolio of assets

Owners/Operators

- Own & operate the assets
- Accountable to the regulator, shareholders, JV partners for asset integrity
A systems level view of IM is critical to ensuring that we address critical interfaces between various specialized disciplines.
Scope of IM documents

Applies to Spars, Semis, FPSOs, TLPs

- In scope
  - hull structure, hull mechanical systems, deck structure
  - all structural appurtenances (e.g. riser baskets, umbilical pull tubes)
  - tendon porches, tendons, tendon foundations
  - Turret, fairleaders, hawse pipes, chain jack foundation porches

- Out of Scope:
  - Process Equipment/ Topsides
  - Risers & Umbilicals
  - Moorings

Applies to permanent mooring systems for FPSO, FSO, FPU, CALM, etc

- In scope
  - Mooring anchor to primary steelwork, supporting systems
  - Turret bearings
  - Fairleads; Chain stoppers
  - Thrusters (TAM)

- Out of Scope
  - MODU moorings
  - DP-only
  - TLP tendons

Applies to all dynamic risers connected to permanent floating systems

- In scope
  - rigid, flexible, hybrid, TTR, drilling, etc
  - Umbilicals with hydrocarbons (i.e. gas lift)
  - All riser components relevant to integrity of the riser,
    - Tensioners
    - Top connections – flexible joints, stress joints, flexing pull-tubes, etc
    - Corrosion protection
    - Buoyancy, VIV suppression

- Out of Scope
  - MODU drilling risers
FEAT Status & Next Steps

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• FEAT TGs
  • Energy shown in moving new 2FSIM, 2MIM and 2RIM RPs forward greatly appreciated
  • Operator experience shares have been vital to process

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